A verified bite by Heteroscodra maculata (Togo starburst or ornamental baboon tarantula) resulting in long-lasting muscle cramps

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First case of a verified bite by *Heteroscodra maculata* (Togo Starburst or Ornamental Baboon Tarantula) with long-lasting muscle cramps.

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Sir,

Reports of bites by theraphosid spiders are infrequent [1,2], and the composition and toxicity of most of their venoms are still poorly understood. While most theraphosid spiders can be considered harmless, some can cause disagreeable symptoms like muscle spasms. The venom of some old-world spiders like the Asian and African theraphosids *Poecilotheria sp.*, *Lampropelma sp.*, and *Pterinochilus sp.* has been implicated in causing these spasms [1,2]. To our knowledge, we present the first case of muscle cramps after the bite of a *Heteroscodra maculata.*

A 19-year-old spider enthusiast consulted his doctor two days after his pet *H. maculata,* a 3-year-old female (**Fig. 1**), had bitten him in the right wrist, while he was putting it into a transport box. He had not been bitten before despite having owned several other spiders for many years. He suffered immediate pain at the site of the bite and developed local swelling. Four hours after the bite, the swelling had significantly improved, but the patient experienced a generalized burning sensation with increasing muscle cramping of his upper extremities and of the back. After two days, muscle cramping also began in his lower extremities, which is why he consulted his doctor. Creatine kinase was not measured. He was empirically treated with magnesium twice daily, which lessened the muscle cramps for a few hours before they reappeared full strength, especially at night and during physical inactivity. After two weeks, the spasms started to recede in an undulating manner, and the patient recovered completely after a month. He never experienced central neurological symptoms. Unfortunately, the spider inexplicably expired several weeks after the bite.

H. maculata is an agile and fast tree dwelling theraphosid spider native to western Africa. For other tree dwelling species like *Poecilotheria*, the specific toxicity has been suggested to be necessary to quickly and efficiently paralyze their large and struggling prey in an aerial environment without the help of an immobilizing web [3], so this might apply to *H. maculata* as well. One toxin in their venom, heteroscodratoxin 1 (HmTx1), has been found to inhibit

voltage-dependent potassium channels (the Kv2.2-subtype found in neurons in the brain) and immediately induce convulsions in mice. Death occurred in less than one hour after injection of 500pmol [4]. Injection of a lower dose (100 pmol) induced rapid convulsions (within 3 minutes), spasms, and tremors, with death occurring in less than two hours and being preceded by recurrent spasms and paralysis [4]. There is no literature to be found on bites by *H. maculata*, but in the very few bite reports found online in spider forums [5], only a minority developed muscle cramps, lasting no longer than a few days, the sensation being described as comparable to feeling sore after intense exercise. In conclusion, the clinical course in our patient was remarkable and suggests, that *H. maculata* might be a theraphosid capable of causing considerable muscular discomfort.

Conflict of interest

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References

1. Fuchs J, von Dechend M, Mordasini R, et al. A verified spider bite and a review of the literature confirm Indian ornamental tree spiders (Poecilotheria species) as underestimated theraphosids of medical importance. Toxicon. 2014;77:73-7.

2. Ahmed N, Pinkham M, Warrell DA. Symptom in search of a toxin: muscle spasms following bites by Old World tarantula spiders (Lampropelma nigerrimum, Pterinochilus murinus, Poecilotheria regalis) with review. QJM. 2009;102(12):851-7.

3. Escoubas P, Rash L. Tarantulas: eight-legged pharmacists and combinatorial chemists. Toxicon. 2004;43(5):555-74. Review.

4. Escoubas P, Diochot S, Célérier ML, et al. Novel tarantula toxins for subtypes of voltage-dependent potassium channels in the Kv2 and Kv4 subfamilies. Mol Pharmacol. 2002;62(1):48-57.

5. www.arachnoboards.com, accessed 7 September 2017.

Figure 1: adult female *Heteroscodra maculata*, photo © Greg Hume, from Wikimedia commons, the free media repository